

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 November 2001 (15.11.2001)

PCT

(10) International Publication Number
WO 01/85208 A3

(51) International Patent Classification⁷: **A61K 39/385**, A61P 37/00 // C12N 15/33, 15/51, 15/31, 15/30, 15/62, C07K 14/245, 14/02, 19/00

(74) Agent: GOLDSTEIN, Jorge, A.; Sterne, Kessler, Goldstein & Fox P.L.L.C., Suite 600, 1100 New York Avenue N.W., Washington, DC 20005-3934 (US).

(21) International Application Number: PCT/IB01/00741

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(22) International Filing Date: 2 May 2001 (02.05.2001)

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(25) Filing Language: English

Published:

— with international search report

(26) Publication Language: English

(88) Date of publication of the international search report:
23 May 2002

(30) Priority Data:

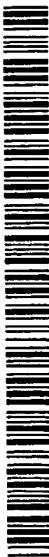
60/202,341 5 May 2000 (05.05.2000) US

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(71) Applicant: CYTOS BIOTECHNOLOGY AG [CH/CH];
Wagistrasse 21, CH-8952 Zürich-Schlieren (CH).

(71) Applicants and

(72) Inventors: SEBBEL, Peter [DE/CH]; Schulstrasse 36, CH-8050 Zürich (CH). DUNANT, Nicolas [CH/CH]; Malzgasse 14, CH-4052 Basel (CH). BACHMANN, Martin [CH/CH]; Tachlis Brunnenstrasse 30, CH-8400 Winterthur (CH). TISSOT, Alain [CH/CH]; Brauerstrasse 78, CH-8004 Zürich (CH). LECENER, Franziska [CH/CH]; Froschaugasse 12, CH-8001 Zürich (CH).



WO 01/85208 A3

(54) Title: MOLECULAR ANTIGEN ARRAYS AND VACCINES

(57) Abstract: The invention provides compositions and processes for the production of ordered and repetitive antigen or antigenic determinant arrays. The compositions of the invention are useful for the production of vaccines for the prevention of infectious diseases, the treatment of allergies and the treatment of cancers. Various embodiments of the invention provide for a core particle that is coated with any desired antigen in a highly ordered and repetitive fashion as the result of specific interactions.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 01/00741

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K39/385 A61P37/00 //C12N15/33,C12N15/51,C12N15/31,
C12N15/30,C12N15/62,C07K14/245,C07K14/02,C07K19/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 578 293 A (AKZO NV) 12 January 1994 (1994-01-12) page 3, line 35 – line 58 ---	1-5, 11-15, 45-60, 79, 80, 83-85
A	BACHMANN M F ET AL: "The influence of virus structure on antibody responses and virus serotype formation" IMMUNOLOGY TODAY, vol. 17, no. 12, 1 December 1996 (1996-12-01), pages 553-558, XP004071007 --- -/-	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

*** Special categories of cited documents :**

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

25 February 2002

05/03/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Teyssier, B

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 01/00741

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 00 32227 A (CYTOS BIOTECHNOLOGY AG) 8 June 2000 (2000-06-08) the whole document -----	28-44, 48-56, 61,62, 78-80, 83-85

FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-27, 45-47, 57-60, 63-77, 81, 82 (in totality); 48-56, 61, 62, 78-80, 83-85 (partially)

Compositions comprising a bacterial pili covalently linked to an antigen; methods of making these compositions; methods of immunisation using these compositions.

2. Claims: 28-44 (in totality); 48-56, 61, 62, 78-80, 83-85 (partially)

Compositions comprising a virus-like molecular scaffold; methods of making these compositions; methods of immunisation using these compositions.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/IB 01/00741

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0578293	A	12-01-1994	EP ES GR AT AU BR CA DE DE DK HU JP MX NZ PT US US ZA	0578293 A1 2142848 T3 3033086 T3 188737 T 4134393 A 9302408 A 2098533 A1 69327553 D1 69327553 T2 578293 T3 68554 A2 6056696 A 303646 A1 247907 A 578293 T 5684145 A 6019983 A 9304199 A	12-01-1994 01-05-2000 31-08-2000 15-01-2000 23-12-1993 11-01-1994 19-12-1993 17-02-2000 10-08-2000 26-06-2000 28-06-1995 01-03-1994 31-05-1994 22-12-1994 30-06-2000 04-11-1997 01-02-2000 10-01-1994
WO 0032227	A	08-06-2000	AU BR CN EP WO	1402000 A 9915771 A 1333693 T 1135162 A2 0032227 A2	19-06-2000 26-12-2001 30-01-2002 26-09-2001 08-06-2000